

CHAL-0123

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This document contains information
referring to Project CHALICE

16 June 1958

MEMORANDUM FOR : Special Assistant to the Director for Planning
and Development

THRU : Director of Development and Procurement, DPS

SUBJECT : HiAc Camera

1. The undersigned visited ITXK 10-11 June 1958 to discuss the
HiAc camera. People contacted were:

A. [redacted]
B. [redacted] (Proj. Eng. for HiAc)
C. [redacted]

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2. The prime purpose of visit was to get details pertaining to
HiAc camera to determine its adaptability to CHALICE. Throughout this
paper it must be kept in mind the HiAc camera was designed for a specific
purpose. Operational limits were are much different than they are for
CHALICE. For example, HiAc was designed to operate at an altitude of
2K and air speed of 30 and 60 m.p.h. Our need is for Kt 20 and in
excess of 400 m.p.h.

3. It is my understanding the HiAc camera in CHALICE would be
utilized as a primary configuration to replace either the A-2 or B
cameras. The usage of HiAc would reduce weight and cubage. This
reduction would permit utilization of more of equipment bay by
BLINF system and lessen weight with consequent higher altitude
capability.

4. A comparative study may assist in coming to a decision whether
we should use HiAc in CHALICE. First as credit we can say cubage and
weight wise HiAc camera has a decided advantage. Dimension of HiAc
are 32" high, 29 1/8" wide and 10 9/16" thick. Completely loaded with
2500' of 70 mm film the camera weighs 69 lbs. batteries and programmer

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would probably take total weight of approximately 75 lbs. The A-2 completely loaded is approximately 364 $\frac{1}{2}$ lbs. The B configuration with 4000' film loads is 416 $\frac{1}{2}$ lbs. with 6000' film loads 521 $\frac{1}{2}$ lbs.

5. The HiAc camera before it can be utilized in CHALICE will have to be modified both externally and internally. The external modification will be necessary to fit the camera into a space now occupied by Tracker which is 37 $\frac{3}{4}$ " x 18 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ ". To accomplish this the scan drive motor will have to be relocated. This is a major redesign problem. In addition, space will have to be found in the Tracker compartment to hold the HiAc programmer and batteries or rectifier (HiAc operate with 6 volts D. C. 6 amps). The Tracker bubble will be replaced with a flat window 48" x 21 $\frac{3}{8}$ x $\frac{1}{4}$ ".

6. Internally a new programmer will be necessary to increase interval from 3 minutes and 9 minutes to least 13 seconds. A new rewind motor will be required. A IMC unit will be needed to perform at speeds and altitudes needed for CHALICE vehicle. Even with these modifications HiAc will not have the capability of giving sufficient overlap between exposures. If it is to be used as a Tracker-type camera it is quite probable an enlarged film capacity may have to be considered.

7. From the viewpoint of photo interpretation the only advantage I see is one of higher resolution and increase scale. The Tracker has a 3" F. L. f/6.3 with a minimum of 40 l/mm. The HiAc has a 12" F. L. f/5 with optical bench resolution on axis of 100 l/mm $\frac{1}{2}$. With a shortening of exposure time as will be necessary if HiAc is to be used in CHALICE the above resolution of 100 l/mm will drop as will resolution in any subsequent enlargements (Faster film has larger grain).

8. In the above paragraphs the HiAc has been compared with the Tracker because the undersigned believes HiAc will not meet the requirements to be a CHALICE primary configuration. First, it does not give overlapping photography from which stereo studies can be made. Second, as processing is used to compensate for deficiencies in exposure certain types of detail will be lost. This is evident in studying photography which was taken when HiAc vehicle was traveling only west to east direction. The processing for detail, when photography would be taken in a variety of flight lines with a CHALICE vehicle, would be more difficult with consequent loss of resolution.

9. Recommendations:

A. The undersigned suggests before we permit any test program be laid on Hycon give Project Headquarters a detailed

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analysis of changes which must be made in HiAc before it can be adapted to CHALICE operations. I talked to [redacted] the afternoon 13 June regarding their proposed test program. He intended to break the test up into 2 phases. Phase I would use the HiAc camera as originally designed but with a A-2 DMC unit. Phase I would according to [redacted] "establish if it is a good idea". After I brought the various points up mentioned in this memo. I informed [redacted] I did not believe his Phase I would prove anything. I told him actually he would be penalizing his equipment by utilizing it in manner for which it was not designed. I suggested to [redacted] he instruct his HiAc project engineers [redacted] to first make a detailed study as to requirements for conversion of HiAc to CHALICE use. This he said he would do. In answer to his question as to whether this meant he should not go ahead with Phase I, I informed him I personally felt he should not, however, it was possible that others in Headquarters after reading this memo may still feel he should go ahead with Phase I testing prior to Hyeon making a more detailed study. If this be the case [redacted] would notify him to this effect.

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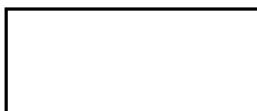
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- 2. - Dir. of D and P, DPS
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